REMARKS/ARGUMENTS

Favorable consideration of this application, in light of the following discussion, is respectfully requested.

Claims 1-19, 64-66, 73-89, 94-105, 110, 112-114, 116-122, 124-126, 128-135 and 139-145 are presently active in this application, Claims 20-22, 24-39, 41-57, 59-63, 67-72, 90-93, 106-109, 111, 115, 123, 127 and 136-138 having been canceled and Claims 1-19, 73-81, 85, 89, 105, 110, 112, 114, 116, 122, 124, 126, 128, 139, 142, 143 and 145 having been amended by way of the present Amendment.

In the outstanding Office Action, Claims 1-17, 20-22, 25-39, 42-57, 60-63, 67-79, 81, 85-90, 92, 93, 105-110, 114, 122, 126, 135-143 and 145 were rejected under 35 U.S.C. 102(e) as being anticipated by Hayano et al. (U.S. Patent 6,548,312). However, Claims 64-66, 82-84, 91, 94-104 and 144 were allowed, and Claims 18, 19, 24, 41, 59, 80, 111-113, 115-121, 123-125 and 127-134 were indicated as being allowable if rewritten in independent form. Applicant acknowledges with appreciation the indication of allowable subject matter.

Claims 1-19, 73-81, 85, 89, 105, 110, 112, 114, 116, 122, 124, 126, 128, 139, 142, 143 and 145 are fully supported by the specification, drawings and claims as originally filled. Hence, no new matter is believed to be added thereby.

Briefly recapitulating, Claim 1 is directed to a method of adjusting an image forming state of a pattern image projected onto an object via a projection optical system. This method includes measuring information related to wavefront aberration of the projection optical system at one measurement point at the least in a field of the projection optical system. The method further includes optimizing a weighting function to compensate an error of the pattern image, and calculating adjustment information in an adjusting unit that adjusts the image forming state of the pattern image, based on the information related to wavefront

aberration and a Zernike sensitivity table corresponding to projection conditions of the pattern image.

The Office Action asserts that Hayano et al. disclose the present invention recited in Claim 1.

However, Hayano et al. neither disclose nor suggest optimizing a weighting function to compensate an error of a pattern image, and calculating adjustment information in an adjusting unit that adjusts an image forming state of the pattern image, based on information related to wavefront aberration of a projection optical system and a Zernike sensitivity table corresponding to projection conditions of the pattern image.

Applicant notes that a claim is anticipated only if each and every element as set forth in the claims is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of Californial*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). As discussed above, Hayano et al. clearly do not meet each and every limitation of Claim 1.

Accordingly, Hayano et al. are not believed in any way to anticipate the specific features recited in Claim 1. Therefore, Claim 1 is believed to be allowable.

Dependent Claims 2-19 and 139 depend directly or indirectly from Claim 1. Accordingly, substantially the same arguments as set forth above with regard to Claim 1 also apply to dependent Claims 2-19 and 139. Hence, each of the dependent claims is also believed to be allowable.

Claim 73 is directed to an exposure apparatus that transfers a pattern onto an object via a projection optical system. The exposure apparatus includes an adjusting unit that adjusts an image forming state of a pattern image projected onto the object via the projection optical system. The exposure apparatus further includes a computing unit that optimizes a weighting function to compensate an error of the pattern image, and calculates adjustment information in the adjusting unit, based on information related to wavefront aberration of the

projection optical system and a Zernike sensitivity table corresponding to projection conditions of the pattern image.

Hayano et al. neither disclose nor suggest a computing unit that optimizes a weighting function to compensate an error of the pattern image, and calculates adjustment information in the adjusting unit, based on information related to wavefront aberration of the projection optical system and a Zernike sensitivity table corresponding to projection conditions of the pattern image.

Accordingly, Hayano et al. are not believed in any way to anticipate the specific features recited in Claim 73. Therefore, Claim 73 is believed to be allowable.

Dependent Claims 74-81 depend directly or indirectly from Claim 73. Accordingly, substantially the same arguments as set forth above with regard to Claim 73 also apply to dependent Claims 74-81. Hence, each of the dependent claims is also believed to be allowable.

Claim 85 is directed to an exposure apparatus that transfers a pattern onto an object via a projection optical system. The exposure apparatus includes a computing unit that obtains a targeted image forming characteristic when a plurality of exposure conditions are settable on projecting the pattern by the projection optical system, based on information related to wavefront aberration of the projection optical system and a Zernike sensitivity table related to the targeted image forming characteristic of the projection optical system, as a linear sum of coefficients of each term in a Zernike polynomial that is decided based on the information related to wavefront aberration and the Zernike sensitivity table. The exposure apparatus further includes an exposure control unit that sets an optimum exposure condition for the pattern, based on the targeted image forming characteristic that has been calculated for each of the exposure conditions.

Hayano et al. neither disclose nor suggest a computing unit that calculates a targeted image forming characteristic of a projection optical system for each of a plurality of exposure conditions settable when a pattern is projected by the projection optical system, based on information related to wavefront aberration of the projection optical system and a Zernike sensitivity table relatd to a targeted image forming characteristic of the projection optical system, as a linear sum of coefficients of each term in a Zernike polynomial that is decided based on the information related to wavefront aberration and the Zernike sensitivity table.

Accordingly, Hayano et al. are not believed in any way to anticipate the specific features recited in Claim 85. Therefore, Claim 85 is believed to be allowable.

Dependent Claims 86-89 depend directly or indirectly from Claim 85. Accordingly, substantially the same arguments as set forth above with regard to Claim 85 also apply to dependent Claims 86-89. Hence, each of the dependent claims is also believed to be allowable.

Claim 105 is directed to an exposure method in which a pattern is transferred onto an object via a projection optical system. The method includes calculating a targeted image forming characteristic of the projection optical system for each of a plurality of exposure conditions settable when the pattern is projected by the projection optical system, based on information related to wavefront aberration of the projection optical system and a Zernike sensitivity table relatd to a targeted image forming characteristic of the projection optical system, as a linear sum of coefficients of each term in a Zernike polynomial that is decided based on said information related to wavefront aberration and the Zernike sensitivity table. The method further includes setting an optimum exposure condition with respect to the pattern, based on the targeted image forming characteristic calculated for each of the exposure conditions, and transferring the pattern onto the object.

Hayano et al. neither disclose nor suggest calculating a targeted image forming characteristic of a projection optical system for each of a plurality of exposure conditions settable when a pattern is projected by the projection optical system, based on information related to wavefront aberration of the projection optical system and a Zernike sensitivity table relatd to a targeted image forming characteristic of the projection optical system, as a linear sum of coefficients of each term in a Zernike polynomial that is decided based on the information related to wavefront aberration and the Zernike sensitivity table.

Accordingly, Hayano et al. are not believed in any way to anticipate the specific features recited in Claim 105. Therefore, Claim 105 is believed to be allowable.

Claims 110, 114, 122 and 126 have been amended to include features recited in Claims 111, 115, 123 and 127, respectively, which were indicated as being allowable if rewritten in independent form. Therefore, Claims 110, 114, 122 and 126 are believed to be allowable.

Dependent Claims 112, 113 and 140 depend directly or indirectly from Claim 110, dependent Claims 116-121 and 141 depend directly or indirectly from Claim 114, dependent Claims 124 and 125 depend directly or indirectly from Claim 122, and dependent Claims 128-135 depend directly or indirectly from Claim 126. Accordingly, each of the dependent claims is also believed to be allowable.

Claims 142, 143 and 145 have been amended to include the features recited in Claims 111, 115 and 123 respectively, which were indicated as being allowable if rewritten in independent form. Therefore, Claims 142, 143 and 145 are believed to be allowable.

Consequently, in view of the present amendment and in view of the indication of allowable subject matter, it is respectfully submitted that this application is in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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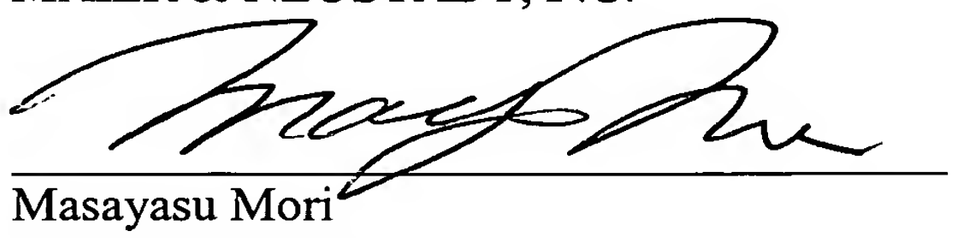

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